Flight Opportunities

Micro-Avionics Multi-Purpose Platform (MicroAMPP) (MicroAMPP)



Completed Technology Project (2017 - 2020)

Project Introduction

The proposed Micro-Avionics Multi-Purpose Platform (MicroAMPP) is a common avionics architecture supporting microsatellites, launch vehicles, and upperstage carrier platforms. The focus of this Tipping Point proposal is to leverage current microsatellite avionics development to implement lessons learned from the Phase I and Phase II NLV Avionics SBIR, along with several commercial deliveries. MicroAMPP is configurable with different sensors and actuators to support the particular application, allowing developers to fine tune performance vs mass, volume, power, and cost. Use of a common platform allows increased production capabilities, with a focus on automated testing for requirements verification. Tyvek will build upon its hardware-in-the-loop (HITL) capabilities developed for complex rendezvous and docking of nanosatellites to create a real-time system capable of simulating launch scenarios, complete with GPS Metric Tracking and support for automated termination systems. This HITL platform is a critical ground tool for any realworld launch vehicle development. Another key deliverable of this Tipping Point effort are test flights towards the certification of a GPS Metric Tracking stand-alone module utilizing the MicroAMPP platform. The reusability of common hardware and software across satellite, launch vehicle, and carrier deployer applications maximizes heritage, allows greater code re-use, and provides a broader return on investment.

Anticipated Benefits

The Micro-Avionics Multi-Purpose Platform (MicroAMPP) is a common avionics architecture supporting microsatellites, launch vehicles, and upper-stage carrier platforms. It is configurable with different sensors and actuators to support the particular application, allowing developers to fine tune performance vs mass, volume, power, and cost. Use of a common platform allows increased production capabilities, with a focus on automated testing for requirements verification. The reusability of common hardware and software across satellite, launch vehicle, and carrier deployer applications maximizes heritage, allows greater code re-use, and provides a broader return on investment.



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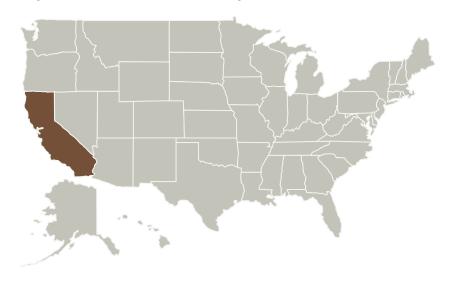
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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Туре	Location
Tyvak Nano-Satellite	Lead	Industry	Irvine,
Systems Inc.	Organization		California

Primary U.S. Work Locations

California

Project Transitions



June 2017: Project Start



May 2020: Closed out

Closeout Summary: Developed and flight qualified a MicroAMPP integrated sys tem that performs GPS metric tracking for small launch vehicles. The design was successfully tested on an UP Aerospace SpaceLoft (SL-14) flight in November of 2019.

Project Website:

https://flightopportunities.ndc.nasa.gov//technologies/200/

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Tyvak Nano-Satellite Systems Inc.

Responsible Program:

Flight Opportunities

Project Management

Program Director:

Christopher E Baker

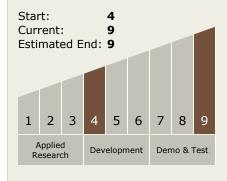
Program Manager:

John W Kelly

Principal Investigator:

Jeff Kwong

Technology Maturity (TRL)



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Technology Areas

Primary:

- TX02 Flight Computing and Avionics
 - □ TX02.2 Avionics Systems and Subsystems

Target Destination Earth

